24 May 2006

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Dover Dam Safety Assurance (DSA)

NEPA Public Scoping Meeting

24 May 2006

Rodney Cremeans

Project Manager

Welcome to our Public Meeting. My name is Dave Rieger, I'm the environmental coordinator for this project. There are several representatives from the Corps here tonight. Rodney Cremeans is the Project Manager; Nick Krupa works in our Operations Division and is the manager for the projects in this part of Ohio; Ken Halstead is the chief of our Hydrology Branch; Scott Wheeler is our structural engineer and Mike McCray is our geologist. Between us I hope we'll be able to answer your questions about Dover Dam and get to hear from you what you think is important for us to know.

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Why are we here today?

- The National Environmental Policy Act of 1969 (NEPA)
  - Our basic national charter for protection of the environment
  - Requires us to insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.

Why are we here today. In 1969, Congress passed and the President signed the National Environmental Policy Act, better known as NEPA, to requires federal agencies to consider the environment when they act. It is our basic national charter for protection of the environment. It establishes policy, sets goals and provides the means for carrying out the policy. It calls for informing and listening to those most affected by the action, the public. Ultimately, the law's intent is not just to produce better documents, but to produce better decisions.

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Why are we here today?

- The National Environmental Policy Act of 1969 (NEPA)
  - Federal agencies shall encourage and facilitate public involvement in decisions which affect the quality of the human environment.
  - Agencies shall use the scoping process for an early identification of what are and what are not the real issues.

We are here tonight to learn what you know about Dover Dam and the people who live nearby. We want to make sure we know what the real issues are before we make any decisions.

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Why are we here today?

- The National Environmental Policy Act of 1969 (NEPA)
  - To comply with NEPA, the Corps will prepare an Environmental Impact Statement or EIS.

The means we use to communicate our decisions and our process for reaching those decisions is a document called an Environmental Impact Statement of EIS for short. In that document, we will state the problems, our goals, describe the existing conditions that may be affected by our decisions, list possible alternatives and try to identify what impacts may occur through our actions. When we get this EIS in draft form, we'll let everyone who's interested read it so that they can let us know what they think. Once we hear from the public, we'll be make our final decisions.

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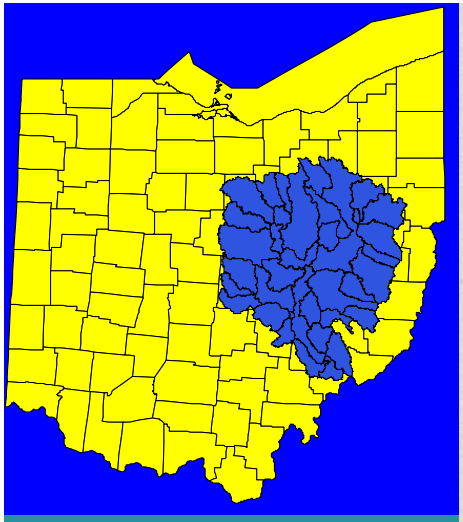
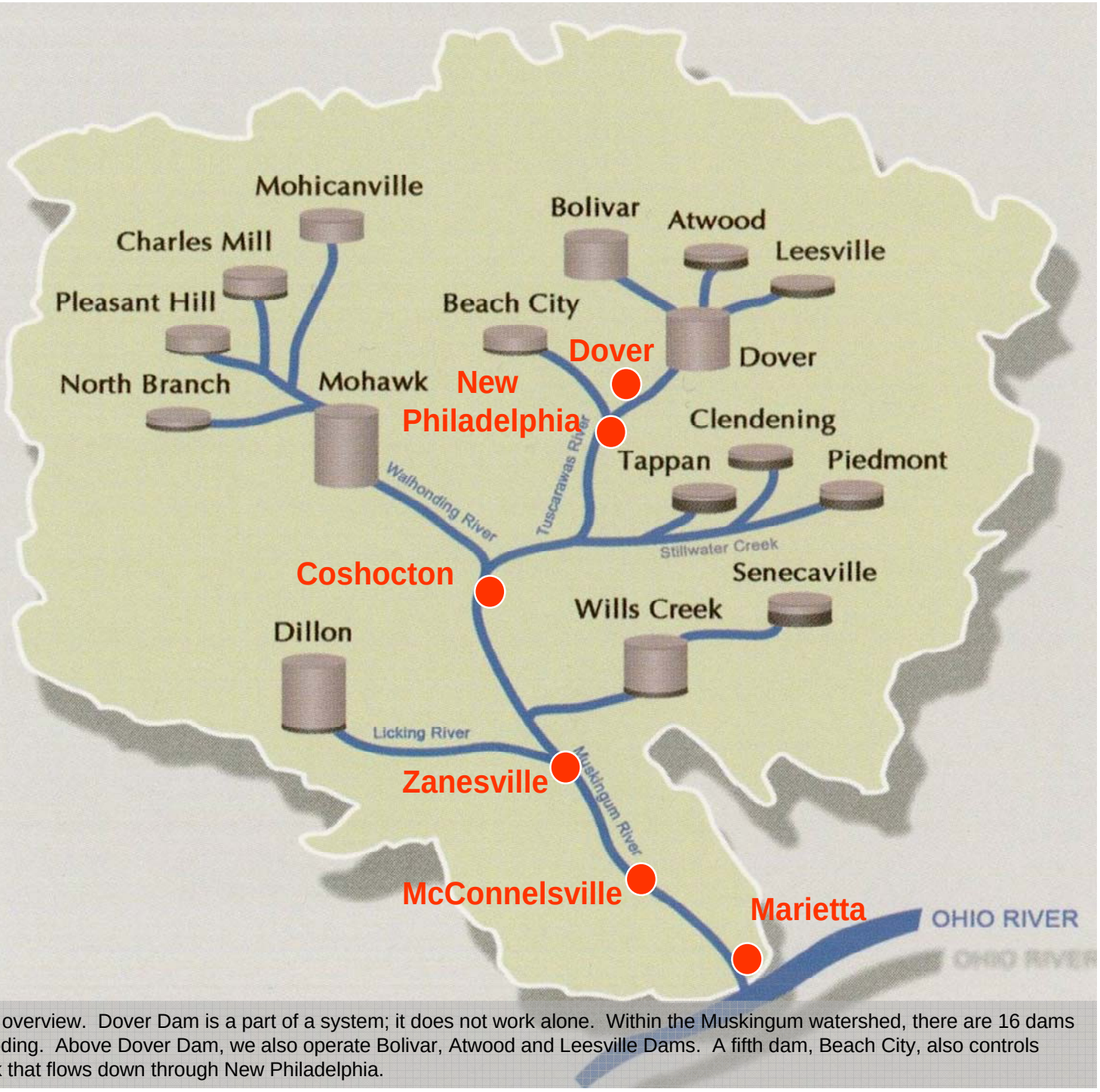
Why are we here today?

- The first step in scoping is to identify concerns, constraints, needs and opportunities.
- We must hear from YOU what is important to consider.
- Only then… can we start to design the fixes.

Tonight is the first step in listening to those most affected by this project….YOU. We want you to tell us about Dover and about New Philadelphia and make sure we know the important stuff.





First though, I'd like to give you a little overview. Dover Dam is a part of a system; it does not work alone. Within the Muskingum watershed, there are 16 dams that act in concert to control flooding. Above Dover Dam, we also operate Bolivar, Atwood and Leesville Dams. A fifth dam, Beach City, also controls water that flows on Sugar Creek that flows down through New Philadelphia.

Dover Dam – Final construction: 1938

- For those of you that have never flown over the dam, this is what it looks like. The river is flowing from right to left, Dover and New Philadelphia are downriver to the left. That's Route 800 running on the north side of the dam; the lower section in the middle is the spillway which is design for water to flow over. So far, the water has never reached the spillway on this project. The sections on both sides of the spillway are dam segments that are not designed to have water flow over them.

- Dover Dam is what we call a dry dam. We let all the water coming down the river flow through the dam except during storms that could produce flooding. Then we close the culverts and let the storm water back up. After the rains stop, we gradually release the stored water.

Here's a ground level view of the spillway which is about as long as a football field. The openings along the bottom of the spillway are culverts which let water flow through the dam during normal river flows.

This is the upstream side of the dam. You can see the culverts that allow us to control the water flowing through the dam. There are gates in the culverts that we can close to hold water back during high water.

Once more from the air, this shows the overall length of the dam.

Pool of Record, Jan 2005

For those of you that were here in January 2005, this was the closest we came to using the spillway in the 70 years the dam's been in place. It was still 8.5 feet below the spillway.

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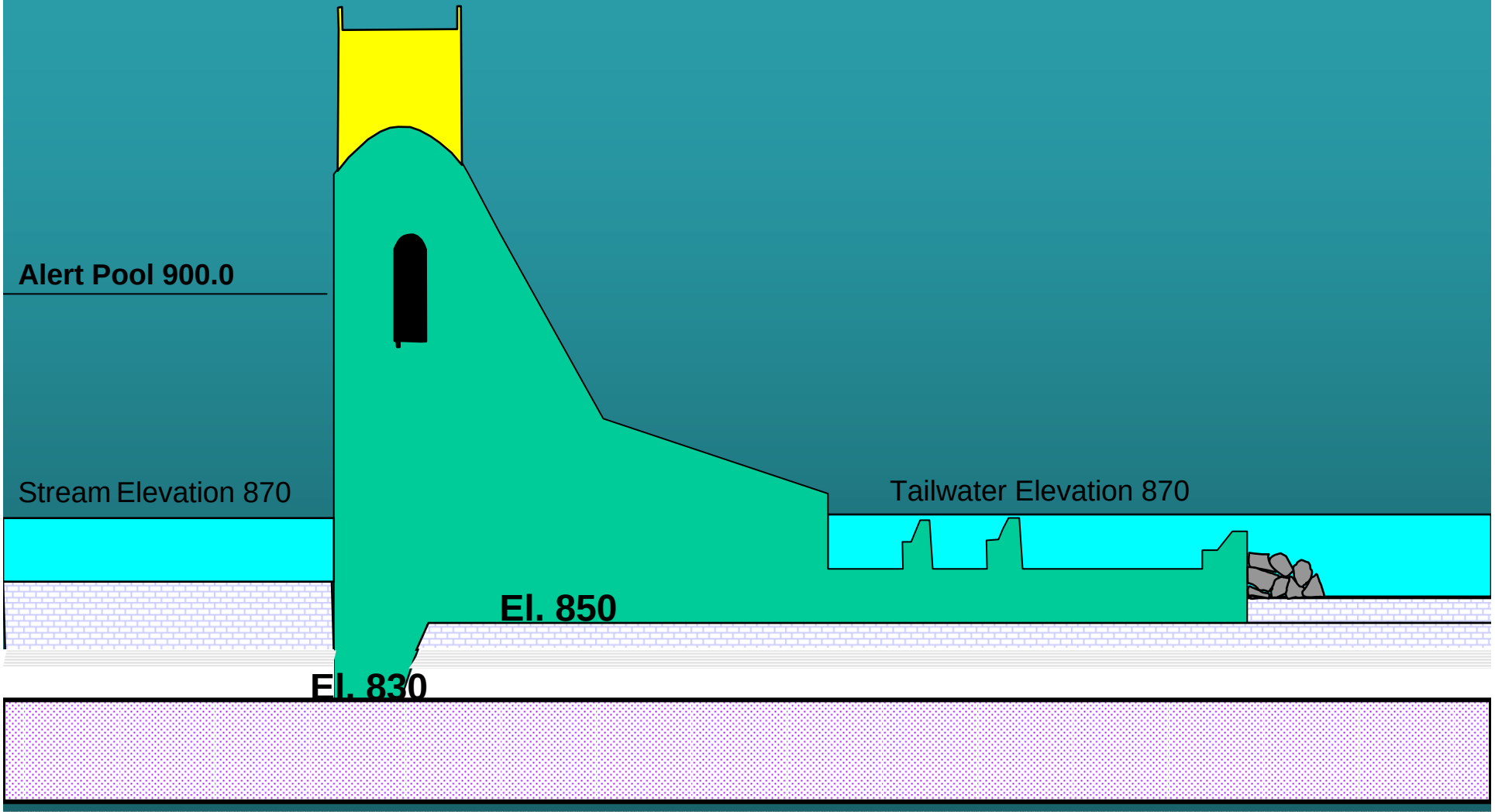
Various Pools Elevations



Just to give everyone an idea of the various elevations associated with this dam. The stream is at elevation 870. When the water raises 30 feet to elevation 900, we have what we call the Alert Pool. At this point we initiate certain procedures, such as gate operations, to maximize safety.

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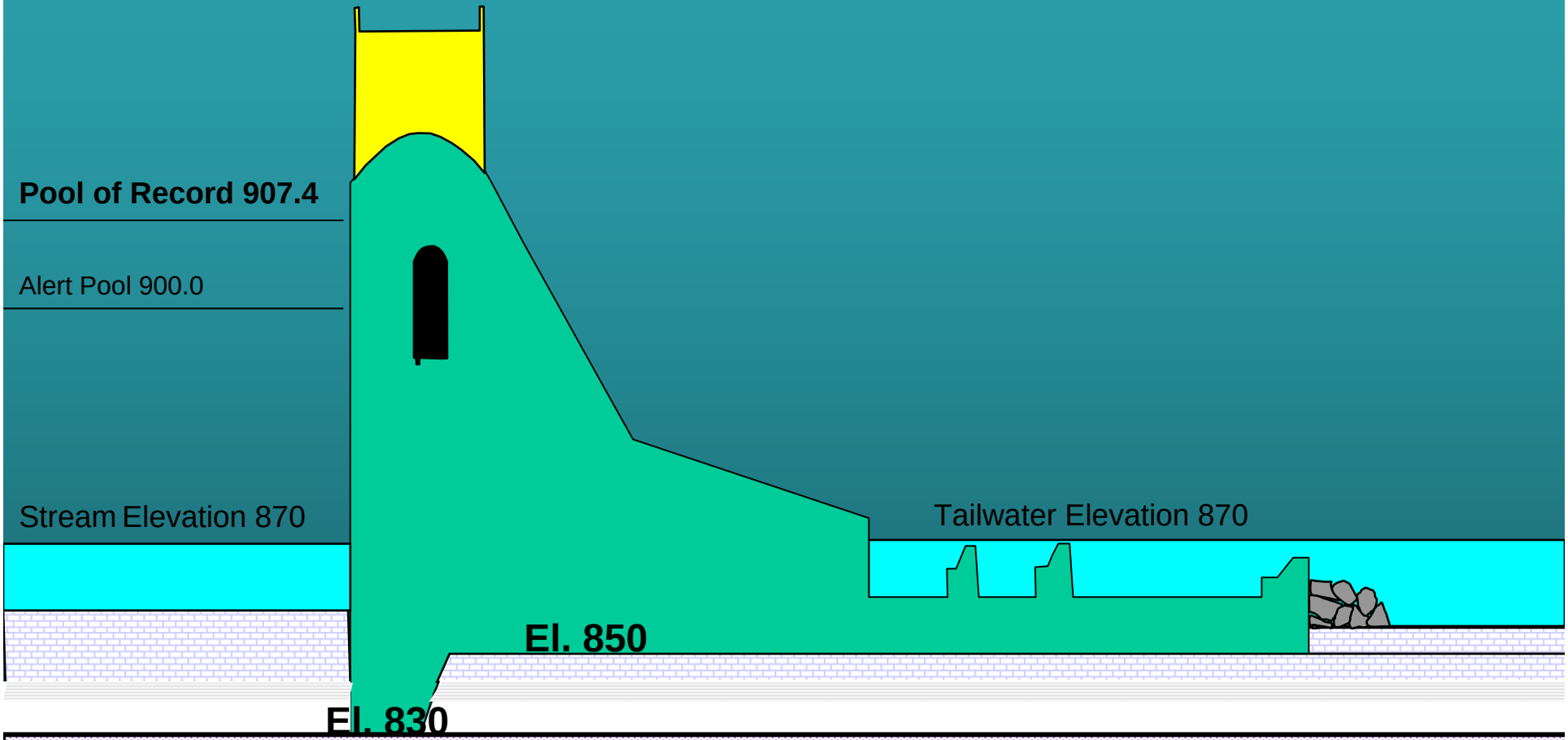
Various Pools Elevations



As we saw in the photo a few slides before, 907.4 is the pool of record and we hit that in January 2005.

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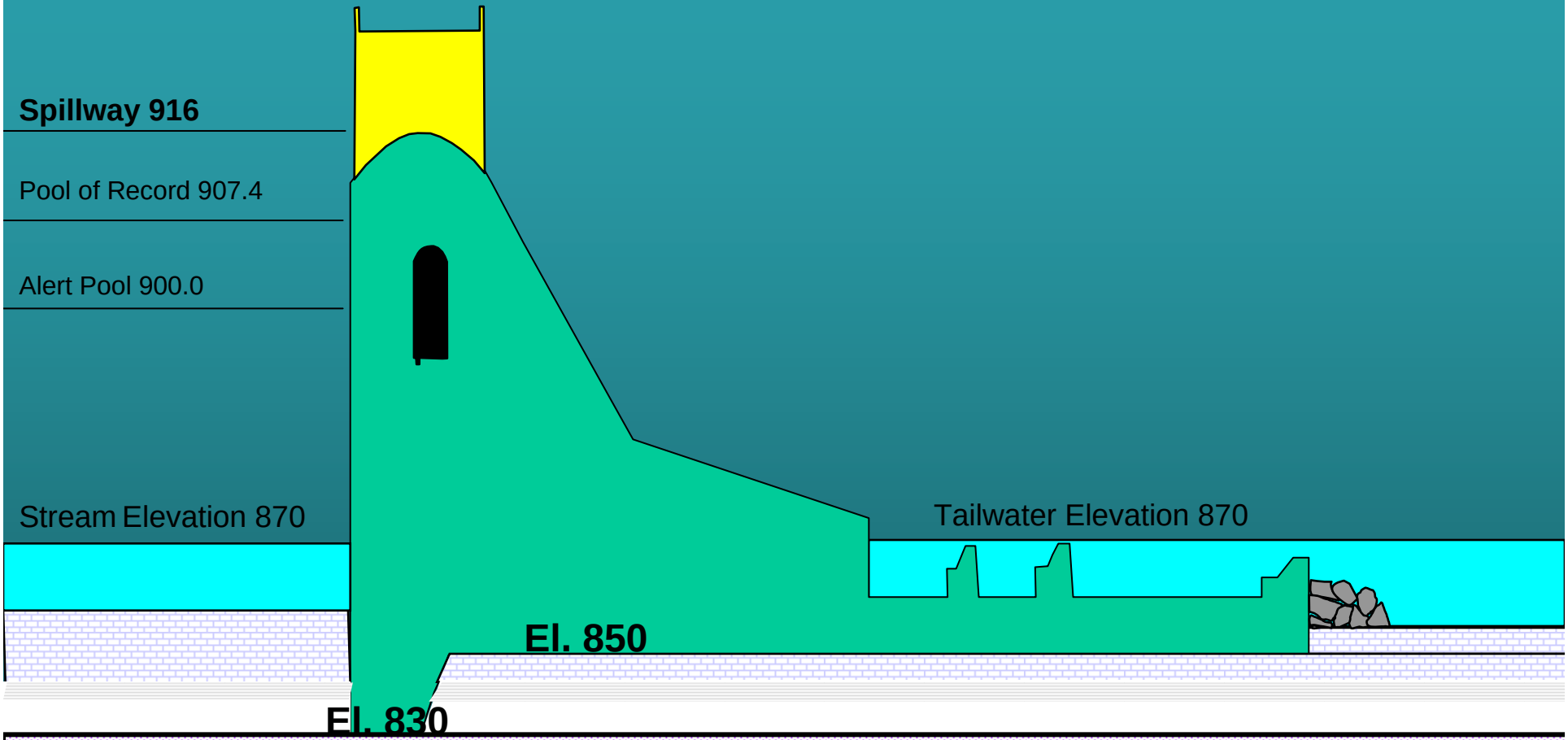
Various Pools Elevations



Our spillway elevation is at 916. At that elevation, water begins to flow over the spillway.

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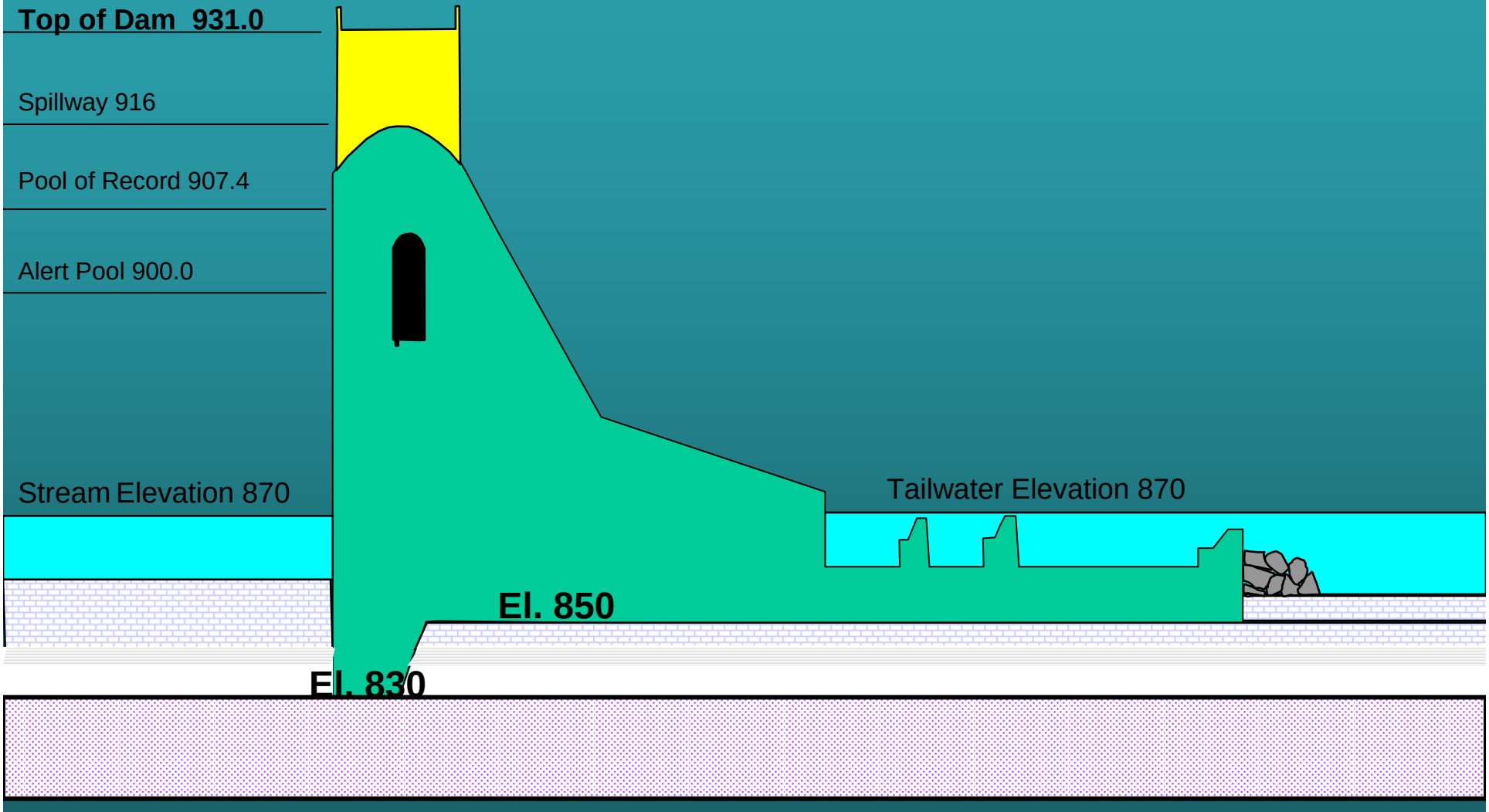
Various Pools Elevations



The top of the dam is 931. This portion of the dam is not designed to have water flow over it.

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Flood Damage Reduction Mission

- Protect human life, property and environment by:
  - Communicating with community
  - Minimizing flooding
  - Safely operating dams
  - Monitoring and surveillance
  - Making necessary repairs

- Now, those of the basic elements of the dam.
- Government-wide, the Corps, along with all other federal agencies that own dams, has embarked on a program to assess all of their respective dams. The Corps has been building dams for many reasons over the years primarily to support navigation and to control flooding. These dams have saved the public billions of dollars in flood related damages. As a bi-product, the public has also benefited from drinking water supplies, recreation and environmental flows. Protecting human life and river-side communities have always been paramount.

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Planning Objectives
Dover Dam Study

- Public Safety
- Meet Authorized Project Purposes
- Environmentally Acceptable

When we assess our dams, it with the primary intent of assuring that they are safe and can provide the safety to the public that they were designed for.

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DSA Study To Date

- We Applied New Criteria to the Way We Look at Things:
  - New storm forecasting techniques
  - New Component Analyses
- We Analyzed The Existing Conditions

And…We Found:

- We began to look at Dover Dam a couple of years ago from two perspectives. First, we examined the integrity of the dam itself to see if it still functioned as it was intended to when we designed it. Second, we applied new criteria to see if the standards we originally used are still good enough. We used modeling tools developed by the National Oceanic and Atmospheric Administration (that's the weather service folks) to calculate how big the maximum flood might be through here. We also have new tools that allow us to study the geology under the dam.
- We found out a few things.

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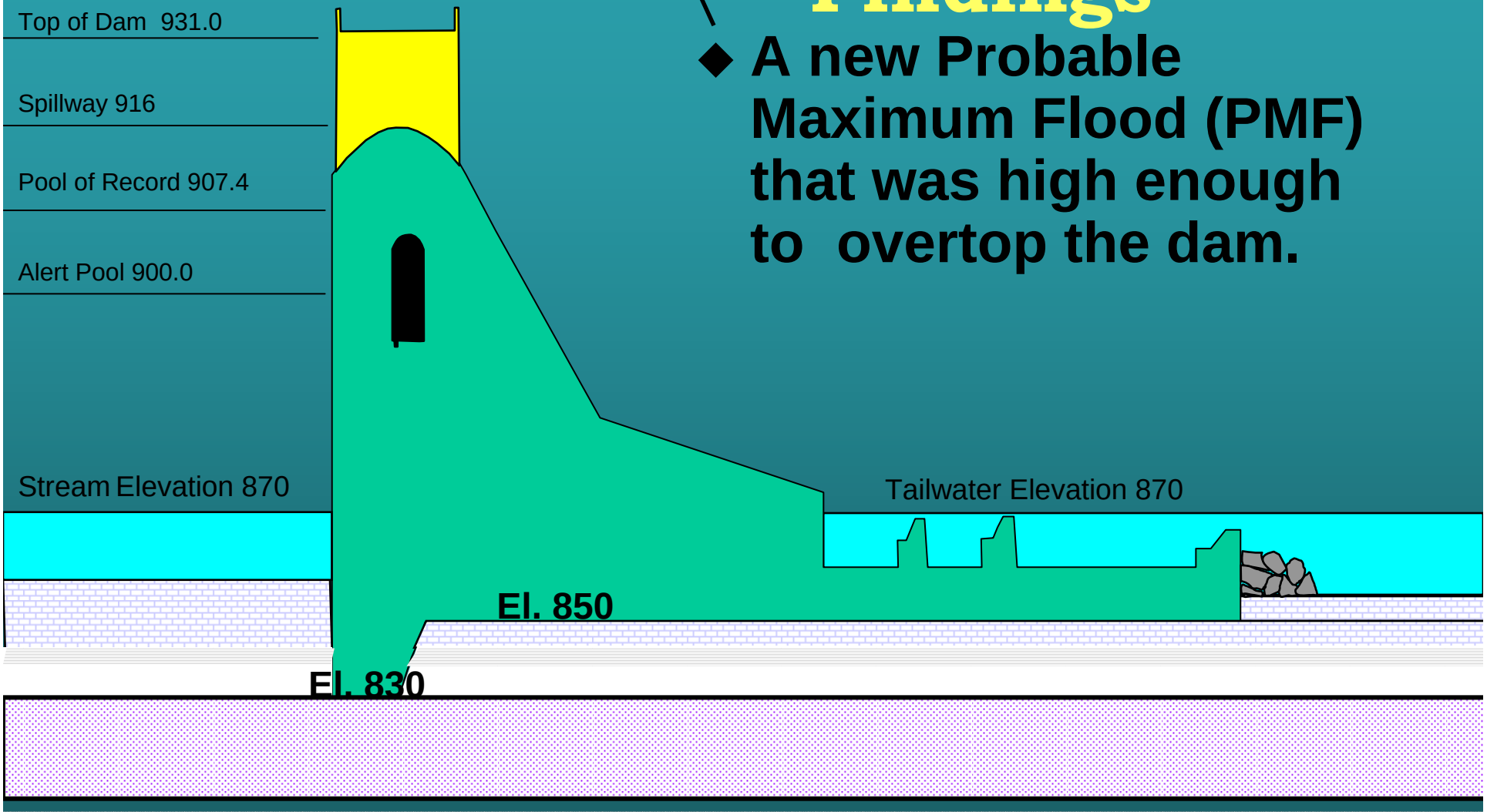
Findings

- **A new Probable Maximum Flood (PMF) that was high enough to overtop the dam.**



First, the storm models told us that the biggest storm we could get was bigger than we thought when we built the dam. We call this theoretical storm the Probable Maximum Flood or PMF. Based on our model, that storm would raise the river almost 10 feet over the dam.

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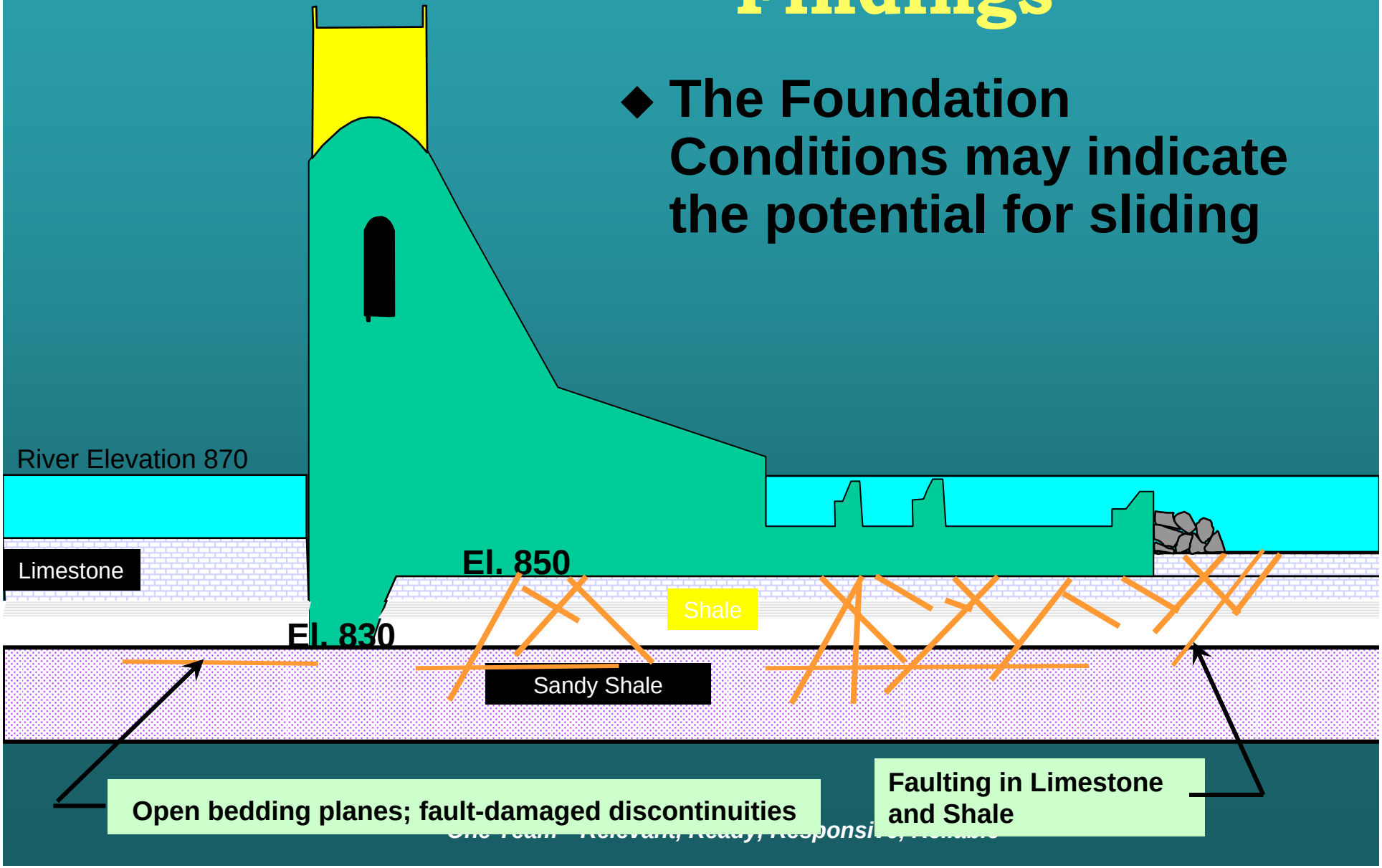
Findings

- **The Foundation Conditions may indicate the potential for sliding**



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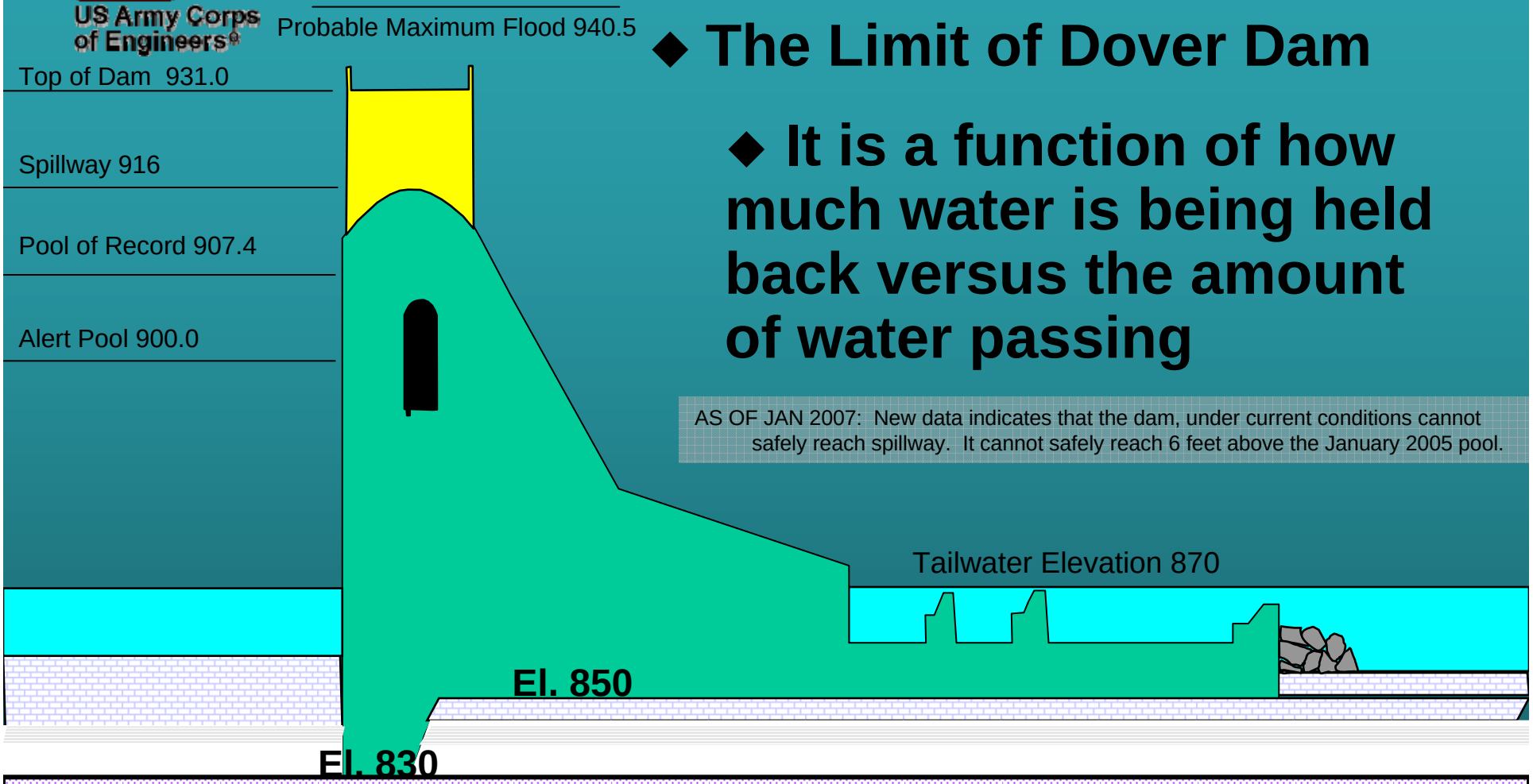

◆ The Limit of Dover Dam

◆ It is a function of how much water is being held back versus the amount of water passing

AS OF JAN 2007: New data indicates that the dam, under current conditions cannot safely reach spillway. It cannot safely reach 6 feet above the January 2005 pool.

◆ These Affect the Way we Operate the Dam now

Finally, we determined that the dam could not retain as much water as we thought. It's still very safe and reliable under most conditions, even including the flood last year. We would have to have a flood level almost 6 feet higher than last year before we might experience problems. Let me remind you that last year was the flood of record. Even then, we could compensate by letting more water flow through the dam and over the spillway.

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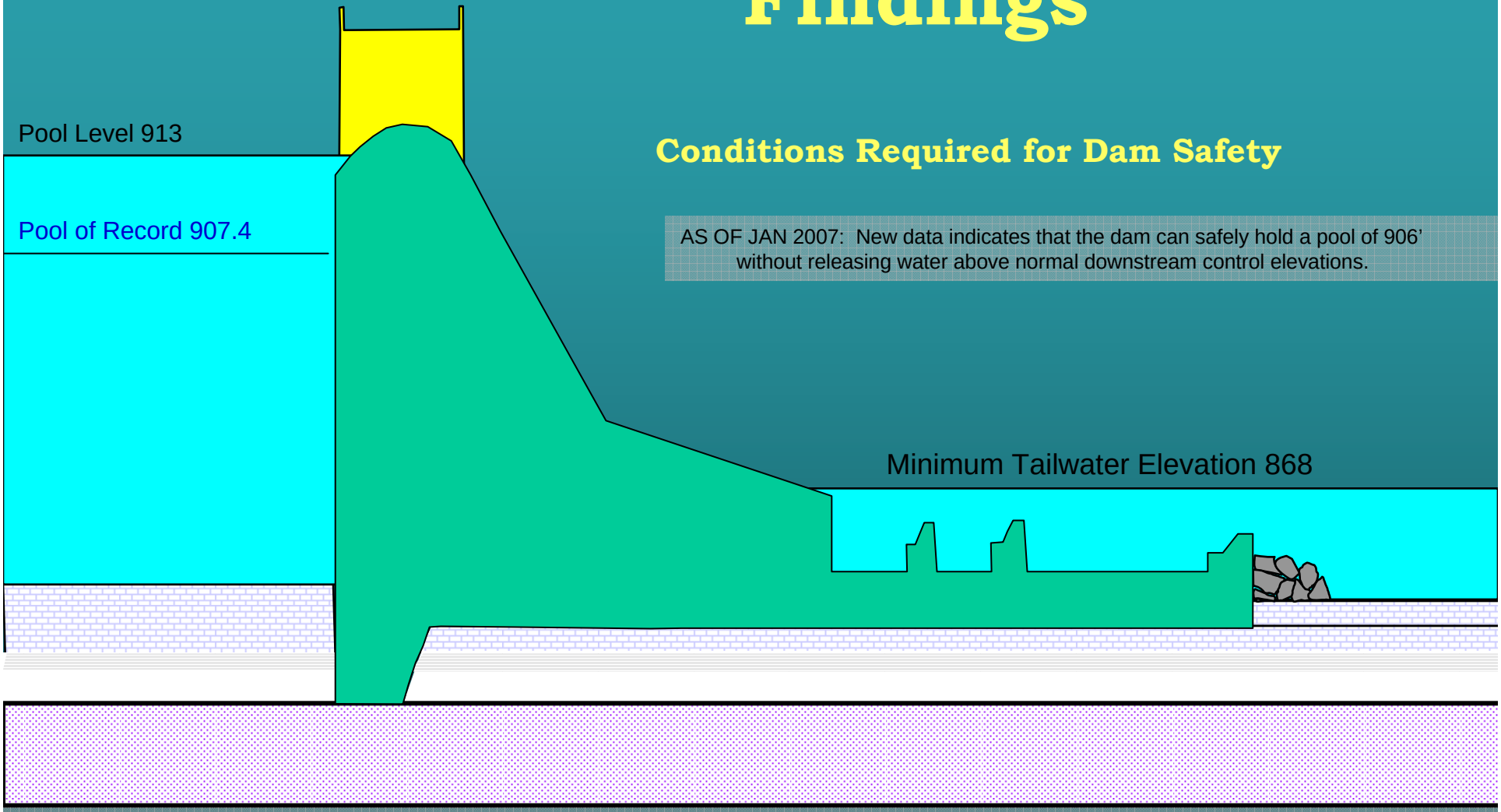
Findings



Conditions Required for Dam Safety

AS OF JAN 2007: New data indicates that the dam can safely hold a pool of 906' without releasing water above normal downstream control elevations.

If the water level behind the dam reached 913, would could safely hold it without releasing water downstream. Note in this case that the tailwater elevation could be as low as 868 which is slightly below normal. By lowering the tailwater, it would open up capacity within the river bank to handle additional flows entering the river between the dam and towns downstream.

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Findings

Conditions Required for Dam Safety

AS OF JAN 2007: New data indicates that the dam, under current conditions cannot safely reach spillway. The District would attempt to control the upper pool elevations within a safe range. During extreme events, releases above control downstream may be required.

If the water continued to rise to the elevation of the spillway, we would have to release more water downstream to maintain the dam. In this case, we estimate the tailwater elevation would have to be about 6 feet higher than normal.

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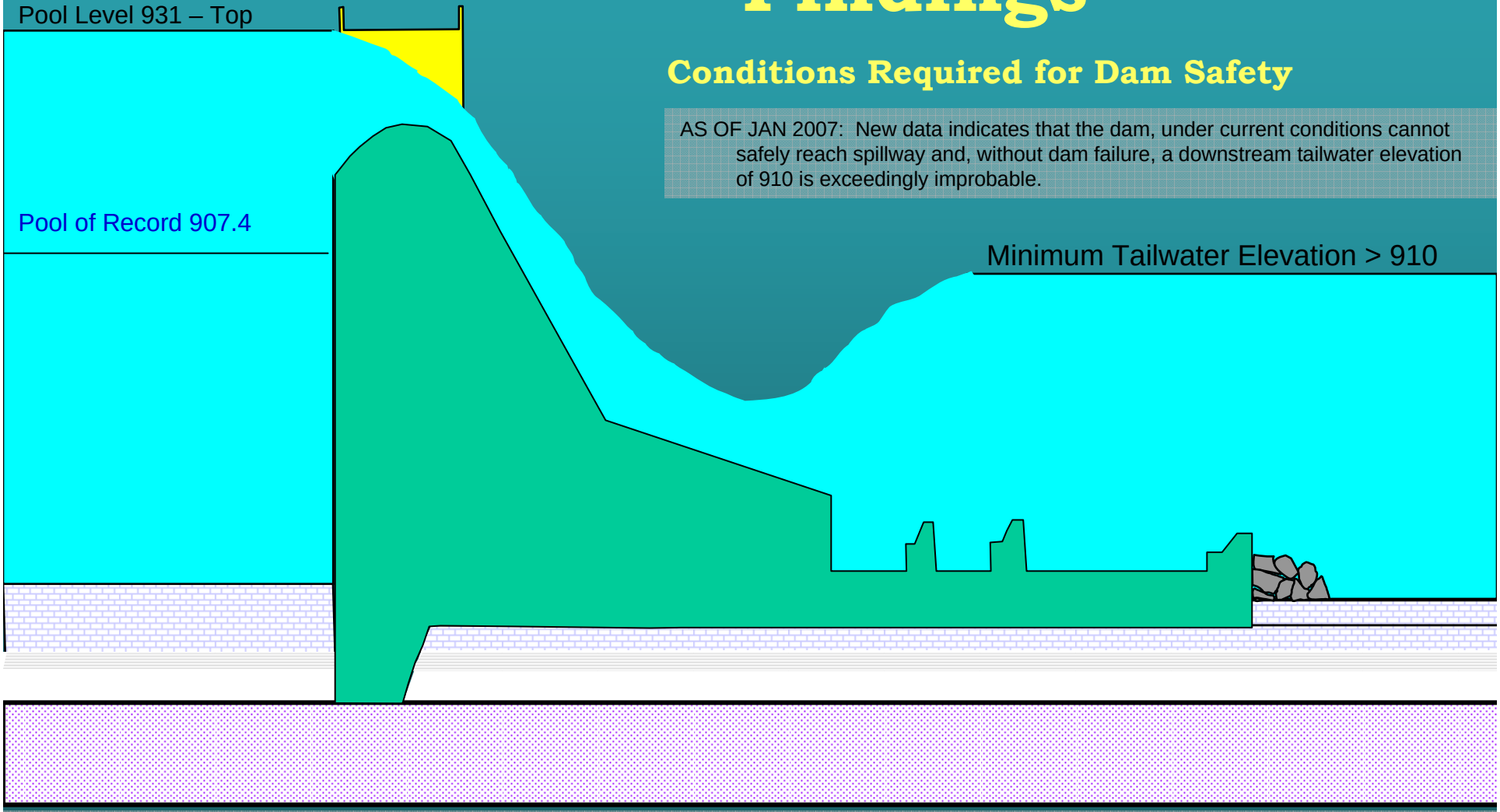
Findings

Conditions Required for Dam Safety

AS OF JAN 2007: New data indicates that the dam, under current conditions cannot safely reach spillway and, without dam failure, a downstream tailwater elevation of 910 is exceedingly improbable.



If the flood levels rose to the top of the dam, we would need to release enough water to raise the tailwater 40 feet above normal. Make no mistake about it, this is an extremely severe storm with a very low probability of occurring.

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Preliminary Alternative Plans

- The Corps of Engineers Study Guidelines Allow Us to Look at Four Levels Of Remediation
  - 100% Of Probable Maximum Flood (PMF)
  - <100% Of PMF
  - Breach The Dam
  - Do Nothing

According to our guidelines, this is not good enough. This study will identify the most cost effective way to provide a greater level of safety for the public while meeting all our project goals.

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 1

- Raise Top Of Dam Only
  - Parapet Wall Constructed On Top Of Non-Overflow Sections
  - Anchor Dam
  - Gate Closure Across Route 800 And Tie-In To High Ground
  - Tie-In To High Ground On Left Bank With Possible Gate Closure

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 2

- Allow Overtopping
  - Anchor Dam
  - Armor Downstream Of Non-Overflow Sections
  - Possible Route 800 Modifications

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Alternative 3

- Construct New Dam Downstream Of Existing
  - Design to Accommodate PMF
  - New Construction
  - Remove Existing Dam
  - Possible Gate Closure Or Road Modifications To Route 800

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 4

- Construct Auxiliary Spillway On Left Bank
  - Spillway Cut Into Hillside – Shape And Size To Be Determined
  - Anchor Dam

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 5

- Combination Raise Top And Auxiliary Spillway
  - Shorter Parapet Wall And Gate Closure
  - Smaller Cut For Spillway
  - Optimize Each Feature
  - Anchor Dam

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 6

- Anchor Dam for Existing Top Elevation 931

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 7

- Anchor Dam for Elevation 931 + Partial Auxiliary Spillway

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 8

- 100% PMF Alternatives at a Smaller Scale
  - Raise Top Of Dam Only
  - Allow Overtopping
  - Construct New Dam Downstream Of Existing
  - Construct Auxiliary Spillway On Left Bank
  - Combination Raise Top And Auxiliary Spillway

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 9

- Hydraulic Study to Determine Ramifications of Removing Dam

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Preliminary Alternative Plans

100% Of Probable Maximum Flood (PMF)

Alternative 10

- Dam Would Be Operated in concert with Upstream Dams to Avoid a Failure
- May Increase Downstream Flooding

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Study Milestones

- 2006 – Complete the DSA Evaluation Report
  - Draft EIS released for Public Review Sep 06
  - Final EIS completed Mar 07
- 2007 - 2008 – Prepare detailed design
- 2009 - 2010 – Construction Plans & Specifications
- 2011 – Begin Construction

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We MUST have YOUR input to do a good job!

- This Comment period is open for 30 days. Please respond by June 23rd.
- There will be an opportunity to comment on the draft report when its issued around September.
- There will be a final comment period next Spring.

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How to Comment

- Comment now
- Fill out a Comment Form
- Seek out Corps Representative
- Send comments by US Mail or e-mail

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Dover Scoping

- Comments
- Suggestions
- Questions

◆ **Contact Information available on handouts**